

**Kramer Electronics, Ltd.**



# **USER MANUAL**

**Model:**

**840**

*DVI Pattern Generator*

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## 1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 350-plus different models now appear in 8 Groups<sup>1</sup>, which are clearly defined by function. Congratulations on purchasing your Kramer DigiTOOLS® **840 DVI<sup>2</sup> Pattern Generator**. It is ideal for the testing and adjusting of flat panel LCD displays, projectors, plasmas and DVI cables, as well as for testing the refresh rates of LCD displays by using the motion patterns. The package includes the following items:

- **840 DVI Pattern Generator**
- Power supply<sup>3</sup>
- This user manual<sup>4</sup> and the Kramer concise product catalog/CD

## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high resolution cables<sup>5</sup>

## 3 Overview

The **840** is a high quality DVI-D pattern Generator (VESA compatible) with 32 preset patterns that supports DVI output resolutions: SVGA (800x600), XGA (1024x768), SXGA (1280x1024), 1400x1050, UXGA (1600x1200), 852x480, 1280x720, 1366x768, 960x540, 720x480, 1920x1080, and 1920x540. All resolutions are @ 60Hz.

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1 GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

2 Digital Visual Interface was designed to provide the industry with a single, universal digital interface (primarily to provide a digital connection between a PC and a display device). It is now considered the industry standard digital graphics interface

3 As an option, you can purchase the Kramer VA-50P 6 Port Universal 12-Volt Power Supply, enabling you to supply power to up to 6 Kramer devices that require 12VDC

4 Download up-to-date Kramer user manuals from the Internet at this URL: <http://www.kramerelectronics.com/manuals.html>

5 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com> (click "Cables and Connectors" in the Products section)

In particular, the **840** includes:

- A DVI-D output
- Seven control buttons: SVGA, XGA, SXGA, UXGA, Wide (On), PATTERN – and PATTERN +
- A 7-segment display that indicates the pattern number
- An on board EEROM that saves the last setting used

**Note that only the digital signal (DVI-D) is available on the DVI connector.**

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality and position your Kramer **840** away from moisture, excessive sunlight and dust

## 4 Your 840 DVI Pattern Generator

Figure 1 and Table 1 define the **840 DVI Pattern Generator** (Table 2 summarizes how to select each DVI Output Resolution):

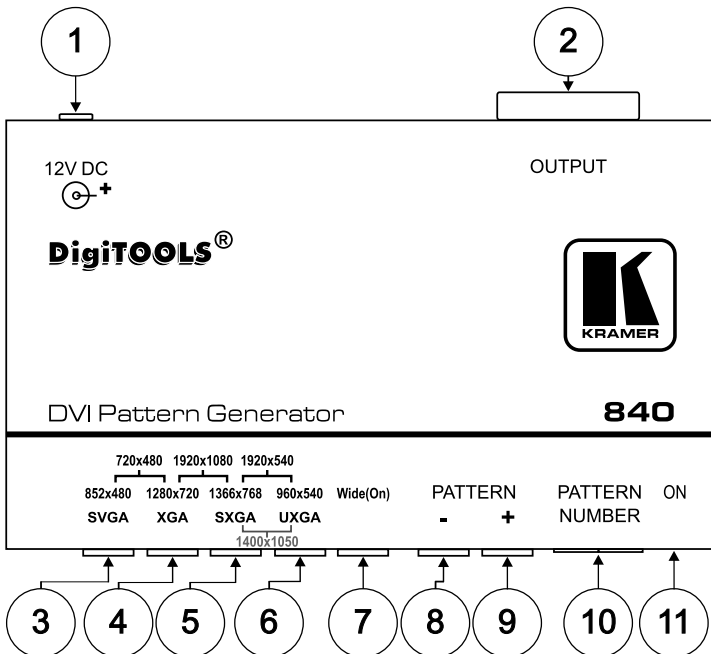


Figure 1: 840 DVI Pattern Generator

Table 1: 840 DVI Pattern Generator Features

#	Feature	Function
1	12V DC	+12V DC connector for powering the unit
2	OUTPUT DVI Connector	Connect to the DVI acceptor
3	SVGA Button <sup>1</sup>	Selects SVGA (800x600) when pressed. Selects 852x480 when pressed together with the <i>Wide (On)</i> button. Selects 720x480 when pressed together with the XGA button and the <i>Wide (On)</i> button
4	XGA Button <sup>1</sup>	Selects XGA (1024x768) when pressed. Selects 1280x720 when pressed together with the <i>Wide (On)</i> button. Selects 720x480 when pressed together with the SVGA button and the <i>Wide (On)</i> button. Selects 1920x1080 when pressed together with the SXGA button and the <i>Wide (On)</i> button
5	SXGA Button <sup>1</sup>	Selects SXGA (1280x1024) when pressed. Selects 1400x1050 when pressed together with the UXGA button. Selects 1366x768 when pressed together with the <i>Wide (On)</i> button. Selects 1920x1080 when pressed together with the XGA button and the <i>Wide (On)</i> button. Selects 1920x540 when pressed together with the UXGA button and the <i>Wide (On)</i> button
6	UXGA Button <sup>1</sup>	Selects UXGA (1600x1200) when pressed. Selects 1400x1050 when pressed together with the SXGA button. Selects 960x540 when pressed together with the <i>Wide (On)</i> button. Selects 1920x540 when pressed together with the SXGA button and the <i>Wide (On)</i> button
7	Wide (On) Button <sup>1</sup>	Displays a wide image and provides 7 extra resolutions when pressed together with one or two of these buttons: SVGA, XGA, SXGA and/or UXGA
8	PATTERN – Button	Goes back to the previous pattern number
9	PATTERN + Button	Advances to the next pattern number
10	PATTERN NUMBER 7-segment Display	Shows the pattern number (from 00 to 31)
11	ON LED	Illuminates when receiving power

Table 2: Selecting the DVI Output Resolutions

To select:	Press:
SVGA	<b>SVGA</b>
XGA	<b>XGA</b>
SXGA	<b>SXGA</b>
1400x1050	<b>SXGA</b> + <b>UXGA</b>
UXGA	<b>UXGA</b>
852x480	<b>SVGA</b> + <b>Wide (On)</b>
1280x720	<b>XGA</b> + <b>Wide (On)</b>
1366x768	<b>SXGA</b> + <b>Wide (On)</b>
960x540	<b>UXGA</b> + <b>Wide (On)</b>
720x480	<b>SVGA</b> + <b>XGA</b> + <b>Wide (On)</b>
1920x1080	<b>XGA</b> + <b>SXGA</b> + <b>Wide (On)</b>
1920x540	<b>SXGA</b> + <b>UXGA</b> + <b>Wide (On)</b>

1 Illuminates when pressed

## 5 Using Your 840 DVI Pattern Generator

This section describes how to:

- Connect the **840 DVI Pattern Generator** (see section 5.1)
- Operate the **840 DVI Pattern Generator** (see section 5.2)
- Interpret each Pattern Number Definition (see section 5.3)

### 5.1 Connecting Your 840 DVI Pattern Generator

To connect the **840 DVI Pattern Generator**, do the following<sup>1</sup>:

1. Connect the OUTPUT connector to a DVI acceptor, for example, a flat panel LCD display (as Figure 2 illustrates), or a projector or plasma screen.
2. Connect the 12V DC power adapter (wall transformer) to the 12V DC socket and connect the transformer to the mains electricity.

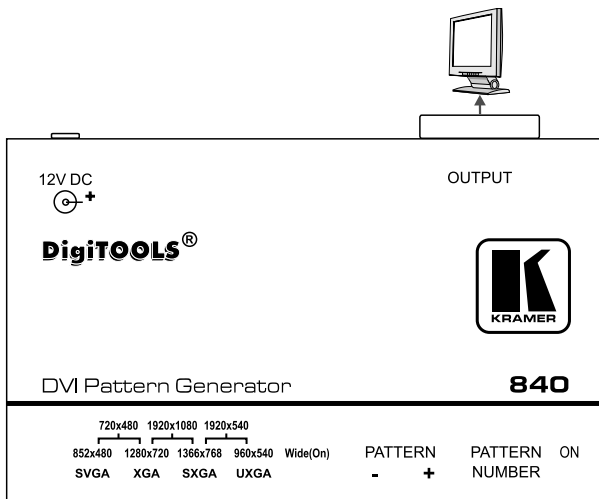


Figure 2: Connecting the 840 DVI Pattern Generator

<sup>1</sup> Switch OFF the power on the DVI acceptor before connecting it to your 840. After connecting your 840, switch on its power and then switch on the power on the DVI acceptor

## 5.2 Operating Your 840 DVI Pattern Generator

Several patterns (see Table 3) are programmed into the **840 DVI Pattern Generator**, in order to assess various aspects in the flat panel LCD display, projector, Plasma screen or cable. For example, the **840** tests a:

- Flat panel LCD display<sup>1</sup> by testing if all the pixels illuminate with the correct amounts of light, linearity, and high frequency response
- Projector, verifying that the colors are as required, tuning the size and focus of the picture
- DVI cable, checking the quality<sup>2</sup> of the colors, both separately and together
- Plasma screen, to check the black level of the plasma monitor (use *PATTERN* 00 to generate the black screen)

To operate the **840 DVI Pattern Generator**, do the following:

1. Press the appropriate *PATTERN* button (*PATTERN* + to display the next pattern or *PATTERN* – to display the previous pattern) to generate the required pattern. The *PATTERN NUMBER* 7-segment Display shows the selected pattern number.
2. Observe the output on your flat panel LCD display, projector or plasma screen.

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<sup>1</sup> Which is built on a matrix of pixels, each pixel consisting of three components: R, G and B

<sup>2</sup> For example, a fuzzy red color in the picture indicates a problem with the red wire

### 5.3 Interpreting Each Pattern Number Definition

Table 3 describes each of the 32 different Patterns:

*Table 3: Pattern Number Definitions*

PATTERN NUMBER		DEFINITION
00	Static	Black screen
01		75% saturated color bar
02		100% saturated color bar
03		Grayscale bar
04		Red screen
05		Green screen
06		Blue screen
07		Yellow screen
08		Cyan screen
09		Magenta screen
10		White screen
11		Gray screen
12		Red, green, blue ramps
13		White crosshatch on black background
14		Red crosshatch on green background
15		Red crosshatch on blue background
16		White squares
17		White dots
18		Active picture border
19		Centered round target and active picture border
20	Motion	Moving vertical line
21		Moving horizontal line
22		Aperture moving over colored background
23		Aperture moving over color bar background
24		Moving red ramp
25		Moving green ramp
26		Moving blue ramp
27	Static	Bounce
28		Multiburst
29		0/100 Vertical Split
30		0/100 Horizontal Split
31		Chess board

## 6 Technical Specifications

Table 4 includes the technical specifications:

*Table 4: Technical specifications<sup>1</sup> of the 840 DVI Pattern Generator*

OUTPUT:	1 DVI <sup>2</sup> , 1.2Vpp on a DVI Molex 24pin female connector; DDC signal 5Vpp (TTL)
DVI OUTPUT RESOLUTIONS:	SVGA (800x600), XGA (1024x768), SXGA (1280x1024), 1400x1050, UXGA (1600x1200), 852x480, 1280x720, 1366x768, 960x540, 720x480, 1920x1080, and 1920x540. All resolutions @ 60Hz
CONTROLS:	Control buttons: PATTERN +, PATTERN –, UXGA, SXGA, XGA, SVGA, Wide (On)
POWER SOURCE:	12 VDC, 150mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 0.98" x 2.95"), W, D, H
WEIGHT:	0.3kg. (0.66lbs.)
ACCESSORIES:	Power supply, mounting bracket

<sup>1</sup> Specifications are subject to change without notice

<sup>2</sup> On a DVI-I connector. Note that only the digital signal (DVI-D) is available on the DVI connector

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## LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

### HOW LONG IS THE WARRANTY

Labor and parts are warranted for three years from the date of the first customer purchase.

### WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

### WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site [www.kramerelectronics.com](http://www.kramerelectronics.com).
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
  - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
  - ii) Product modification, or failure to follow instructions supplied with the product
  - iii) Repair or attempted repair by anyone not authorized by Kramer
  - iv) Any shipment of the product (claims must be presented to the carrier)
  - v) Removal or installation of the product
  - vi) Any other cause, which does not relate to a product defect
  - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

### WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

### HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on your product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

### LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

### EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or;
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

**NOTE:** All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);  
generic emission standard.  
Part 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.  
Part 1: Residential, commercial and light industry environment".
- CFR-47: FCC Rules and Regulations:  
Part 15: "Radio frequency devices  
Subpart B – Unintentional radiators"

### CAUTION!

- ☒ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ☒ Use the supplied DC power supply to feed power to the machine.
- ☒ Please use recommended interconnection cables to connect the machine to other components.



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**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com).**

**Updates to this user manual may be found at  
<http://www.kramerelectronics.com/manuals.html>.**

**We welcome your questions, comments and feedback.**



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